INVENTOR: JAMES ANTHONY BALNAVES ET AL.
TITLE: METHOD AND APPARATUS FOR MULTIMEDIA EDITING
Sheet 1 of 19 Appln. no. 09/407,293
Docket No.: 00169.001468

FITZPATRICK, CELLA, HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NEW YORK 10112
212-218-2100

OIPE JUN 10 2005 PATENT & TRADEMARK OFFICE

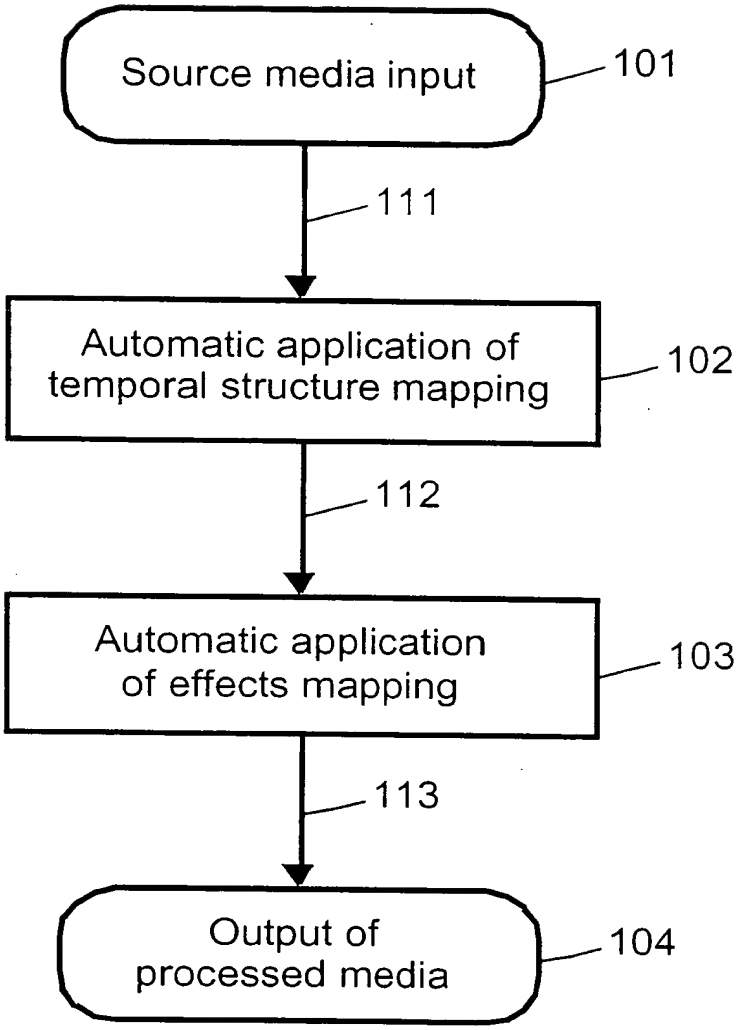
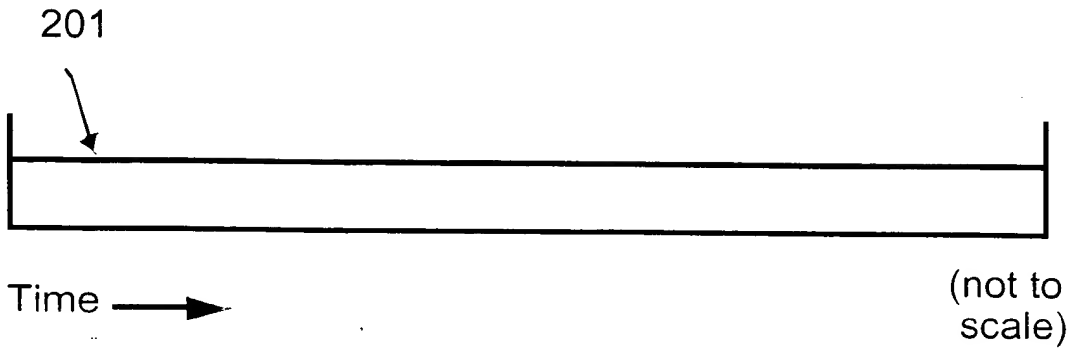
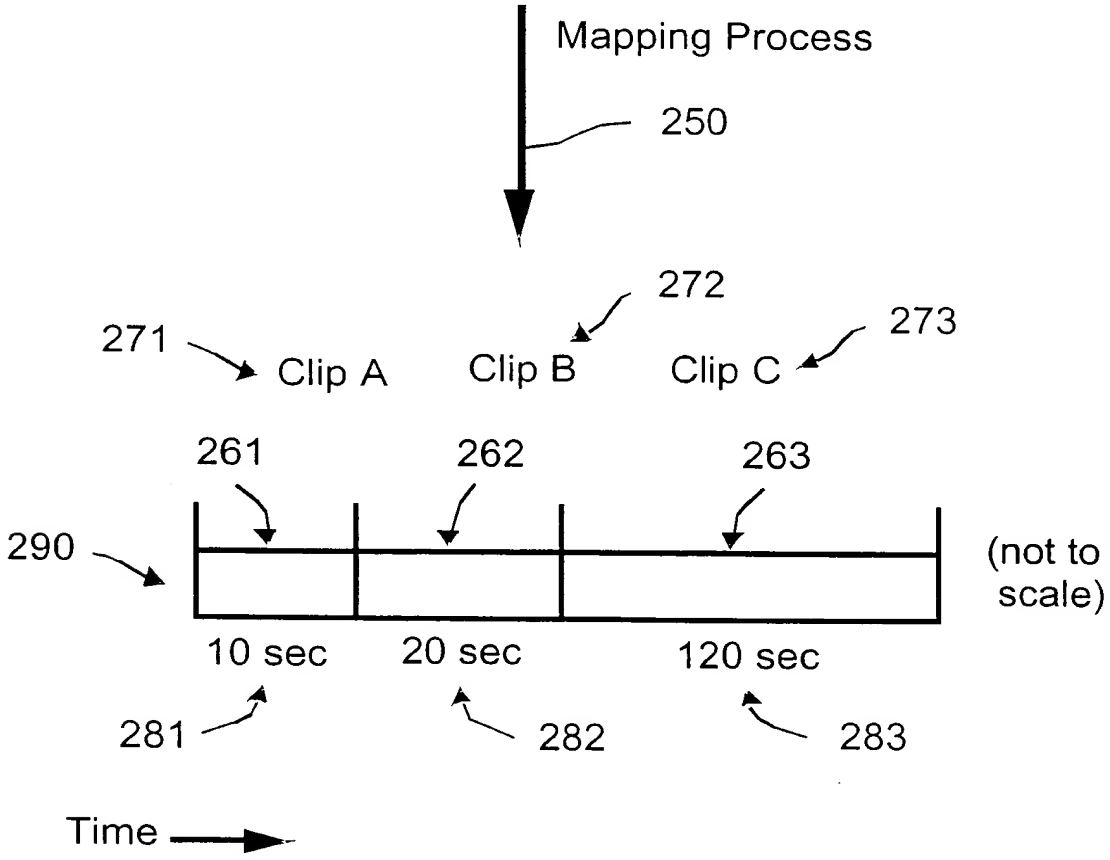


Fig. 1

OIPE JC23
JUN 10 2005
PATENT & TRADEMARK OFFICE



Total Duration: 38min, 50sec



Total Duration: 2min, 30sec

Fig. 2

INVENTOR: JAMES ANTHONY BALNAVES ET AL.
TITLE: METHOD AND APPARATUS FOR MULTIMEDIA EDITING
Sheet 3 of 19 Appln. no. 09/407,293
Docket No.: 00169.001468

FITZPATRICK, CELLA, HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NEW YORK 10112
212-218-2100

JUN 10 2005

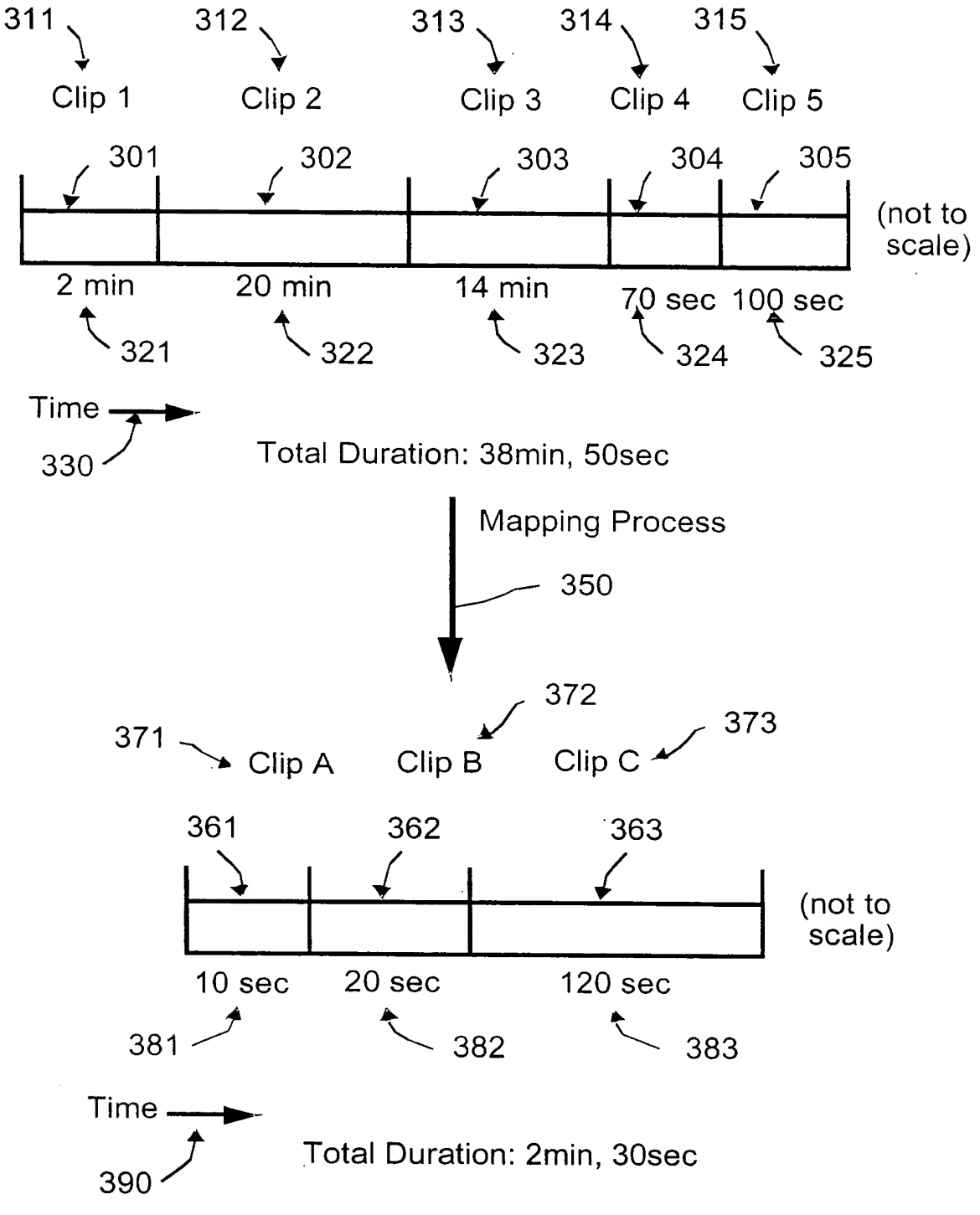


Fig. 3

FITZPATRICK, CELLA, HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NEW YORK 10112
212-218-2100

OIPE
JUN 10 2005
PATENT & TRADEMARK OFFICE

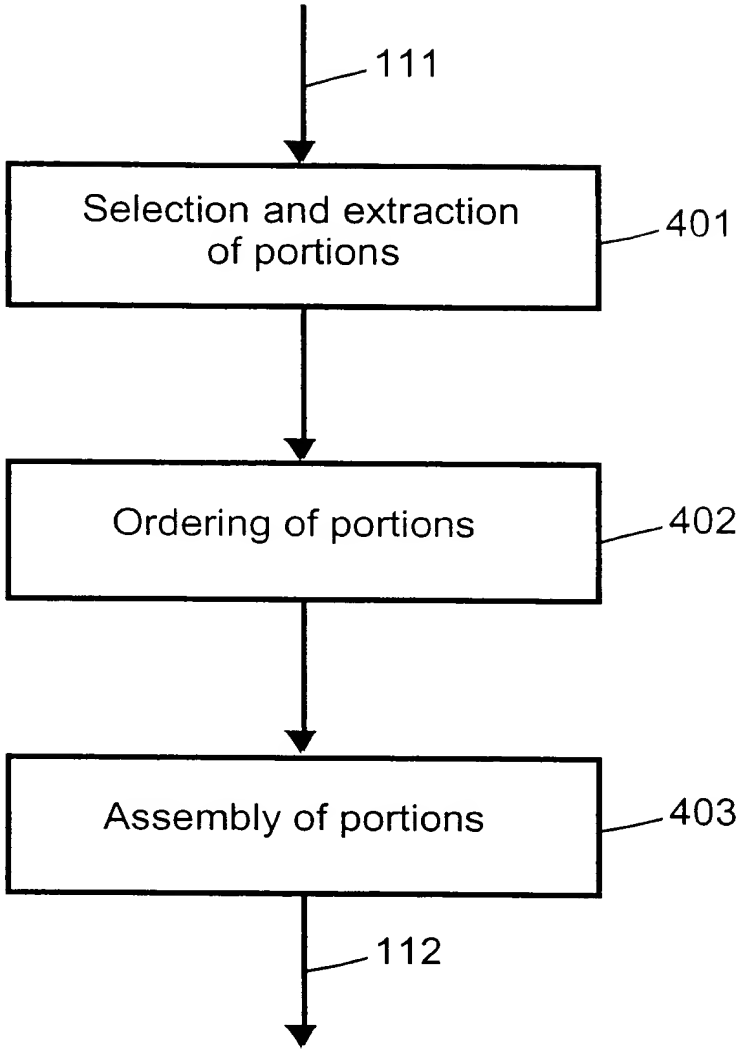


Fig. 4

OIPE
JUN 10 2005
PATENT & TRADEMARK OFFICE

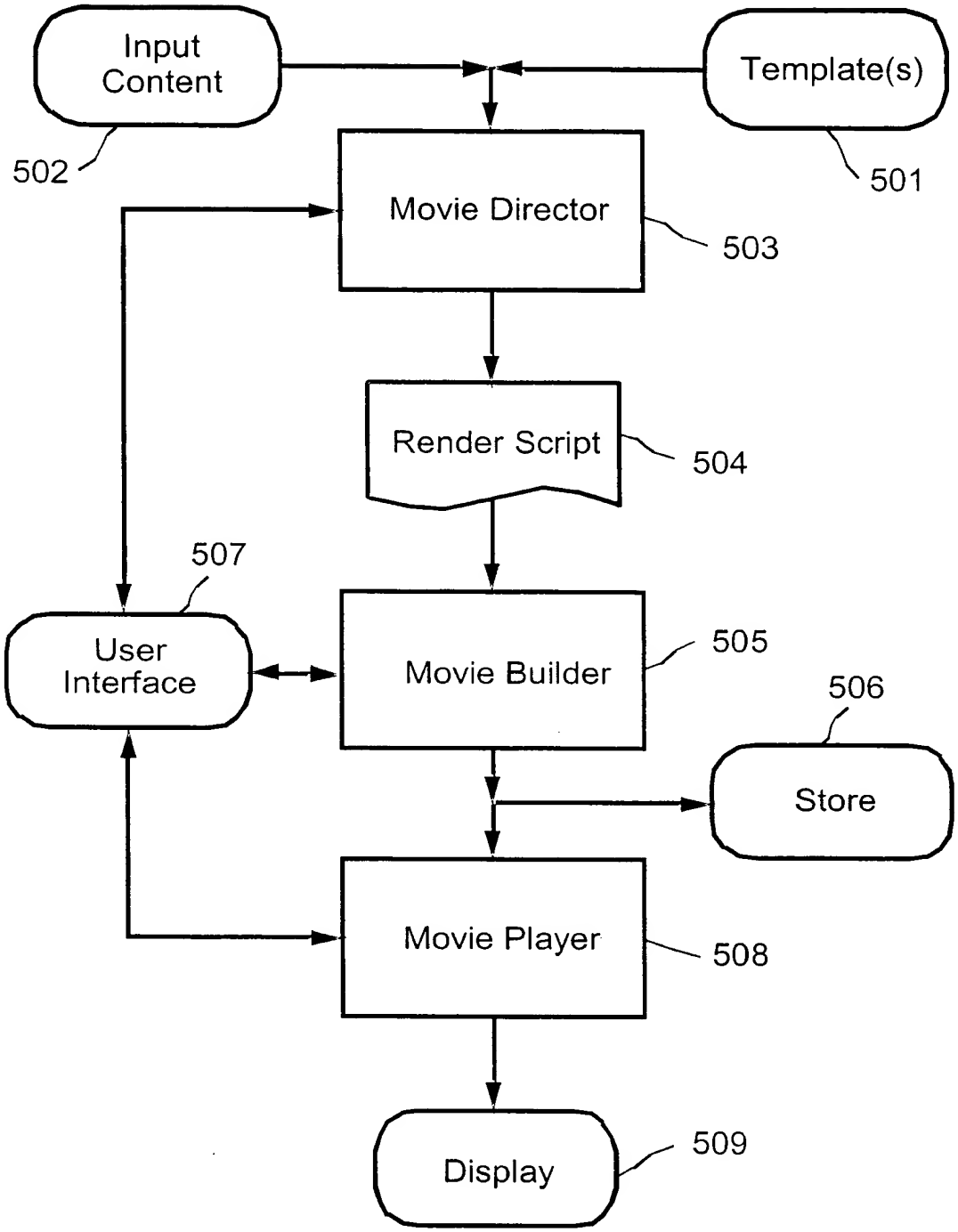


Fig. 5

INVENTOR: JAMES ANTHONY BALNAVES ET AL.
TITLE: METHOD AND APPARATUS FOR MULTIMEDIA EDITING
Sheet 6 of 19 Appln. no. 09/407,293
Docket No.: 00169.001468

FITZPATRICK, CELLA, HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NEW YORK 10112
212-218-2100

OIPE
JUN 10 2005

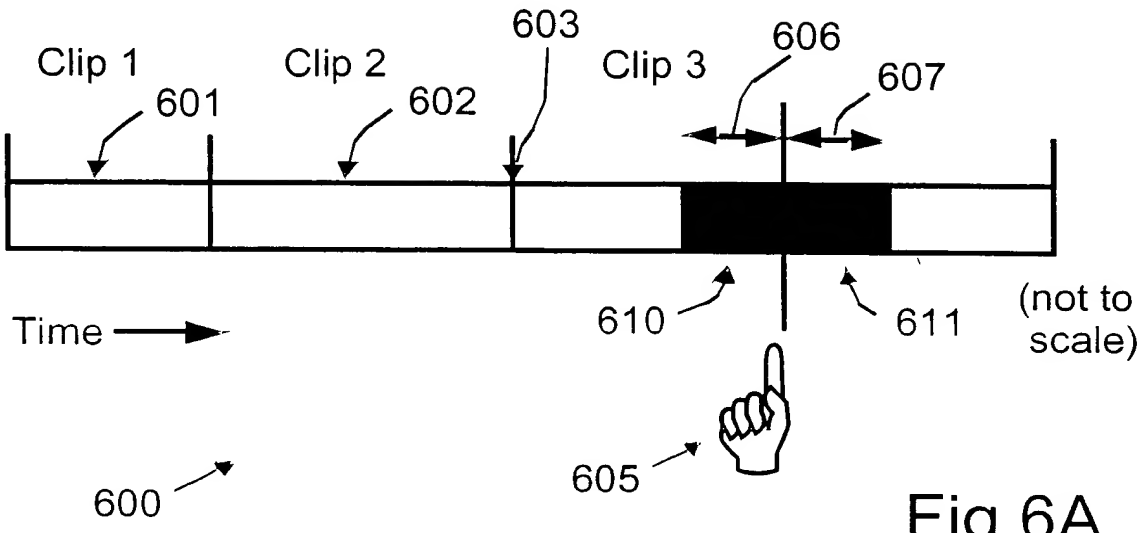


Fig 6A

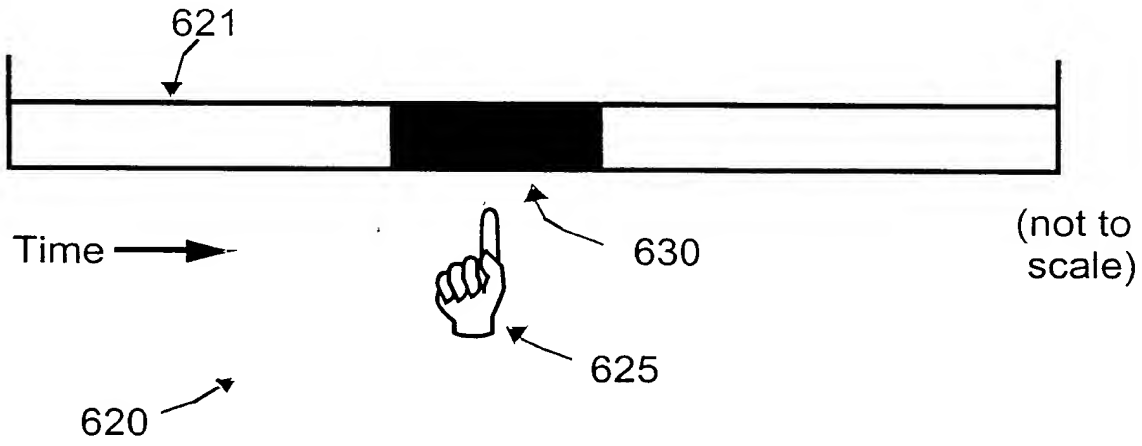


Fig. 6B

OIPE
JUN 10 2005
PATENT & TRADEMARK OFFICE

Selection and Extraction Method Examples		
Selected Portion Start	**Extracted Duration**	**Relationships between Selections**
Within whole content.	Random.	Random, chronological, without overlap.
Within clip.	Less than or equal to clip length.	Random, chronology ignored, overlap ignored.
Within a group of clips.	Spanning one or more clips recorded within the same day.	From separate clips.
Heuristically obtained, eg. assume zones of interest in recorded content occur primarily near clip startpoints.	Heuristically obtained, eg. related to human attention span.	From a group of clips recorded within the same day.
Multi-pass (repetitious)	Limited so as to limit total output duration (eg. based on heuristics).	From all clips within whole content.
	Short durations followed by longer durations (eg. applied to multipass selection)	Repetitious, for instance, to lengthen output content duration with respect input content duration.

Fig. 8

OIPE
JUN 10 2005
PATENT & TRADEMARK OFFICE

Ordering Method Examples
Sequential or chronological
Random
Reverse-chronological
Flashback (later chronologies displayed or duplicated early in the order)
Montage (later chronologies displayed in brief early in the order)
Cutaway (two related or consecutive portions separated by an unrelated or distant portion)
Alternate

Fig. 9

Assembly Method Examples
Cut (butt-edit)
Short Dissolve
Long Dissolve
Fast Wipe
Slow Wipe
Graphic

Fig. 10

FITZPATRICK, CELLA, HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NEW YORK 10112
212-218-2100

OIPE
JUN 10 2005
PATENT & TRADEMARK OFFICE

Effects Mapping Examples
Addition of Sound effect
Removal of chrominance
Addition of artificial scratches and dust
Composition or overlay of sprites, animation, graphics
Addition of Music
Luminance or chrominance keying or matteing
Dissolve or mixing of other content

Fig. 11

OIPE
JUN 10 2005
PATENT & TRADEMARK OFFICE

FITZPATRICK, CELLA, HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NEW YORK 10112
212-218-2100

Silent Movie Template Components Example	
Component	**Purpose**
Four well-separated random video selections from input content.	Selection of sufficiently differing activities or incidents from the input content to create surprise or reduce boredom.
Extract limited duration clips for each selection, each preferably less than 2 minutes in duration.	Limit clip duration to the effective viewer attention span and avoid boredom.
Filter clips to remove all chrominance information.	Replicate "black and white" characteristic of Silent Movie genre.
Remove original audio information.	Replicate silent characteristic of Silent Movie genre.
Add piano soundtrack.	Replicate characteristic of Silent Movie genre.
Insert dialogue mattes at clip boundaries.	Replicate characteristic of Silent Movie genre.
Apply scratch and dust filter.	Replicate characteristic of Silent Movie genre.
Cut in titles, dialogue mattes and clips.	Replicate hard-cut characteristic of Silent Movie genre.
Insert fade-in from black to title dialogue matte.	Include title in characteristic style of Silent Movie genre.
Insert fade-out to black from end-title dialogue matte.	Include end-title in characteristic style of Silent Movie genre.
Insert film projector sprocket hole sound over title.	Replicate projector sound-effect characteristic of Silent Movie genre.

Fig. 12

OIPE
JUN 10 2005
PATENT & TRADEMARK OFFICE

FITZPATRICK, CELLA, HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NEW YORK 10112
212-218-2100

Fig. 13

Example Associations between Editing & Effect Techniques and Template Type				
	Romance Montage	Action Montage	Continuity Template	Silent Movie
Transitions				
Fade				
Fade out	✓		✓	✓
Fade in	✓		✓	✓
Dissolve	✓			
Cross-fades	✓		✓	
Wipe		✓		
Quick/Whip		✓		
Audio	✓		✓	
Sound Types				
Actual Sound	✓	✓	✓	
Sound effects	✓	✓	✓	✓
Atmos sound	✓	✓	✓	✓
Voice over	✓	✓	✓	
Cuts				
Cross cut	✓	✓		
Continuity cut	✓	✓	✓	✓
Compilation cuts		✓		
Split editing	✓		✓	
Parallel cutting				
Classical cutting	✓		✓	✓
Editing effects				
Cutaways	✓	✓	✓	
Insert	✓	✓	✓	
Subliminal cuts				
Flashbacks		✓	✓	
Freeze-frames	✓	✓		
Frequency	✓	✓		
Duration				
Montages	✓	✓		
Rhythm	✓	✓	✓	
Reverse shot	✓	✓	✓	
Shot length				
Same length			✓	
Slow cutting	✓			
Fast cutting	✓	✓		
Cut to beat/music	✓	✓		

INVENTOR: JAMES ANTHONY BALNAVES ET AL.
TITLE: METHOD AND APPARATUS FOR MULTIMEDIA EDITING
Sheet 12 of 19 Appln. no. 09/407,293
Docket No.: 00169.001468

OIPE JUN 10 2005 PATENT & TRADEMARK OFFICE

FITZPATRICK, CELLA, HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NEW YORK 10112
212-218-2100

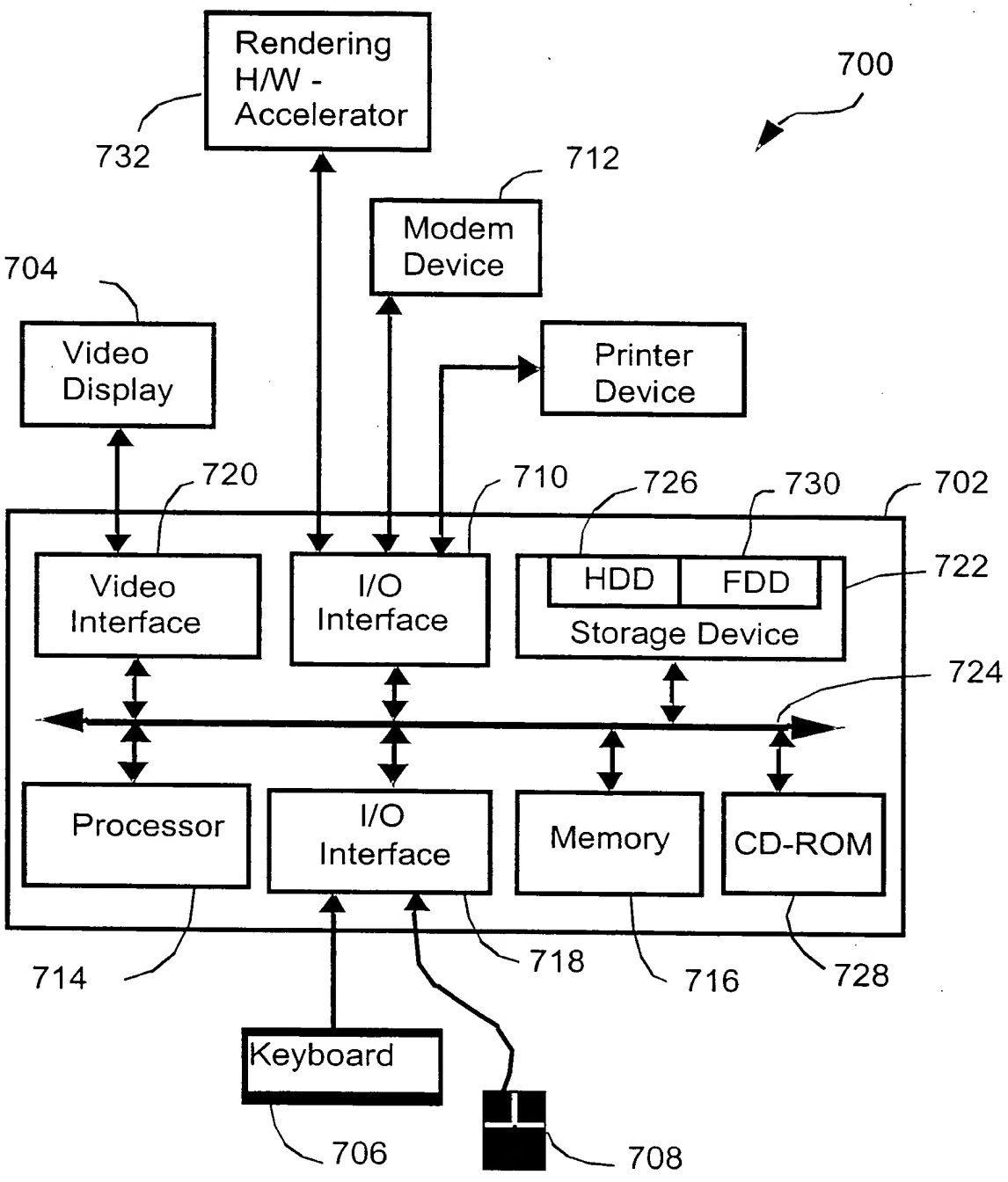


FIG. 7

INVENTOR: JAMES ANTHONY BALNAVES ET AL.
TITLE: METHOD AND APPARATUS FOR MULTIMEDIA EDITING
Sheet 13 **of** 19 **Appln. no.** 09/407,293
Docket No.: 00169.001468

FITZPATRICK, CELLA, HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NEW YORK 10112
212-218-2100

Fig. 14A

Movie Director Example Implementation (Pseudo-code)

```
main()
begin
        create rule list
        create parameter list
        create item list
        create rule syntax table

        get template file name
        load(template_file_name)

        get render script file name
        create render script file

        get input content file names
        create content list
        contentparse(content_list, input_content_file_names,...)

        ruleparse(installed_rules, content_list, render_script_file)
        save render_script_file
        close render_script_file
        exit
end

load(template_file_name)
begin
        while(not end of template_file)
        begin
                get next item
                if (item_type == reference)
                        resolve(item)
                else if (item_type == rule)
                        install rule_name
                else if (item_type == parameter)
                        write(parameter_list, parameter_name)
                else if (item_type == rule_syntax_extension)
                        write(rule_syntax_table, rule_syntax_extension)
                else
                        write(item_list, item_name)
        end
end

resolve(reference_name)
begin

                if (reference_type == provided_content)
```

OIPE JUN 10 2005 PATENT & TRADEMARK

Fig. 14B

```
                begin
                        get provided content file name
                        contentparse(content_list, provided_content_file_name)
                end
                else
                        get referenced item
        end
end


contentparse(content_list, content_file_name, ...)
begin
        while(not last content item)
        begin
                if (content_file_name_type == directory)
                        begin
                        get directory contents
                        contentparse(content_list,
                                        directory_content_file_names,...)
                        end
                else
                        begin
                        get content information
                        write(content_list, content_file_name, content_information)
                        end
        end
end


ruleparse(rule_list, content_list, render_script_file_name)
begin
        create instruction list
        while (not last rule)
        begin
                get rule
                decode(instructions, operands, rule, content_references,
                        parameter_references, item_references)
        end

        get instruction list
        while (not last instruction)
        begin
                execute instruction(operands)
        end
end

decode(instructions, operands, rule, content_references, parameter_references,
          item_references)
begin
        while (not end of rule)
```

OIPE JUN 10 2005 PATENT & TRADEMARK OFFICE

```
begin
        get next portion
        if (portion_type == instruction)
                begin
                read(portion)
                convert portion according to rule syntax table
                write(instruction_list, instruction)
                end
        else
                begin
                read(reference)
                convert portion according to rule syntax table
                write(instruction_list, operand)
                end
        end
end
```

Fig. 14C

FITZPATRICK, CELLA, HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NEW YORK 10112
212-218-2100

Fig. 15A

Movie Builder Example Implementation (Pseudo-code)

```
main()
begin
        get render script file name
        get destination movie file name
        open render script file
        create qt_movie_file
        parse(render_script_file, qt_movie_file)
        close render_script_file
        save qt_movie_file
        close qt_movie_file
        exit
end

parse(script_file_name, qt_movie_file)
begin
        while(not end of script_file)
        begin
                get next script file line
                parse_line(script_file_line, qt_movie_file)
        end
end

parse_line(script_file_line, qt_movie_file)
begin
        get first word of line
        if "//" return
        else if "video" then
                video(script_file_line, qt_movie_file)
        else if "audio" then
                audio(script_file_line, qt_movie_file)
        else if "transition" then
                transition(script_file_line, qt_movie_file)
```

INVENTOR: JAMES ANTHONY BALNAVES ET AL.
TITLE: METHOD AND APPARATUS FOR MULTIMEDIA EDITING
Sheet 17 of 19 Appln. no. 09/407,293
Docket No.: 00169.001468

FITZPATRICK, CELLA, HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NEW YORK 10112
212-218-2100

OIPE
JUN 10 2005
PATENT & TRADEMARK OFFICE

```
        else
                flag error in script file
end

video(script_file_line, qt_movie_file)
begin
        parse video paramenters
        add video to qt_movie_file using QT API
end

audio(script_file_line, qt_movie_file)
begin
        parse audio paramenters
        add audio to qt_movie_file using QT API
end

transition(script_file_line, qt_movie_file)
begin
        parse transition paramenters
        add transition to qt_movie_file using QT API
end
```

Fig. 15B

INVENTOR: JAMES ANTHONY BALNAVES ET AL.
TITLE: METHOD AND APPARATUS FOR MULTIMEDIA EDITING
Sheet 18 of 19 Appln. no. 09/407,293
Docket No.: 00169.001468

FITZPATRICK, CELLA, HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NEW YORK 10112
212-218-2100

OIPE JUN 10 2005 PATENT & TRADEMARK OFFICE

Template Example Implementation (Pseudo-code)

```
//Action Template                    Fast-paced, quick cutting, fast beat.
cut_order = chronological            //chronology not strictly enforced
structure = 10s, 4s, ...             //repetitive temporal structure
intraclip_cutting = 2                //one long clip may contribute 2 elements
intraclip_spacing = 2s
avoid_cutting = 1s, -1s              //do not use first/last second of clip
cut_method = random, clip
play_order = forward
structure_transition = 3, 4, crossfade  //3-4 frame crossfade
beat_synchronise = true              //sync video clip lengths to music beat
back_track = action                  //specify backing music characteristics
audio_action = mute_all              //remove all original audio
title = action_title
end_title = action_end_title

//function definition

length check_fit(content-length, structure, intraclip_spacing, intraclip_cutting,
                        avoid_cutting)
begin
        length = content_length – avoid_cutting[0] + avoid_cutting[1] - structure[0]
        x = intraclip_cutting
        while (x > 1)
        begin
                x = x - 1
                length = length – structure[x] – intraclip_spacing[x]
        end
        return length
end
```

Fig. 16A

OIPE
JUN 1 0 2005
PATENT & TRADEMARK OFFICE

```
main()          //start
begin
        trim (title, beat_synchronise, structure_transition)
        assemble_edit (output, title, play_order, structure_transition, audio_action,
                        back_track)
        while not (completed content list)
        begin
                get next content (cut_order)
                excess = check_fit (content_length, structure, intraclip_cutting,
                        intraclip_spacing, avoid_cutting)
                if (excess > 0)
                begin
                        y = 0
                        cut_start = cut_method(excess)
                        cut_end = 0
                        while (y < intraclip_cutting)
                        begin
                                cut_end = cut (avoid_cutting + cut_start + cut_end,
                                        structure[y])
                                y = y + 1
                                cut_start = excess – cut_start
                        end
                end

                trim (current_clips, beat_synchronise, structure_transition)
                assemble_edit (output, current_clips, play_order, structure_transition,
                                audio_action, back_track)
        end
        trim (end_title, beat_synchronise, structure_transition)
        assemble_edit (output, end_title, play_order, structure_transition, audio_action,
                        back_track)
end //finish
```

Fig. 16B